

**OBSERVATIONS ON THE EASTERN MOUSE SPIDER
MISSULENA BRADLEYI RAINBOW (MYGALOMORPHAE:
ACTINOPODIDAE): NATURAL HISTORY AND
ENVENOMATION**

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Abstract

A mass wandering of *Missulena bradleyi* is recorded from under a house in south-eastern Queensland during and following storms. Some notes are made on envenomation and burrows. It is suggested that the preferred habitat of males may be fissures in clay soils. Evidence is presented to support increased humidity as the primary stimulus for wandering behaviour in the mature males.

Introduction

Main (1976) has noted that spiders of the genus *Missulena* Walckenaer "Although widespread from desert to eucalypt forest (but not tropical rain forest) it never occurs in numbers". During the breeding season, mygalomorph males wander in search of a mate (Loaring and Loaring 1948). In Western Australian species, Main (1980) records "males mature in late autumn and early winter. They wander during daylight, which is unique for mygalomorphs". During unseasonally heavy rain, seventy five specimens of *M. bradleyi* were observed under a house at Mt Tamborine in south-eastern Queensland.

Observations

From 1-12 April 1988, 1140 mm of rain fell on the eastern slopes of Mt Tamborine. The rain was accompanied by 60 knot winds and almost continuous, heavy fog. The area is steeply sloping, partly cleared subtropical rain forest with heavy red clay soils.

During and immediately after these April storms seventy five *M. bradleyi*, all mature males, were collected on 40 m² of concrete under a house. Three were subsequently taken to the Queensland Museum for identification. Another 40 m² of the underhouse area consisted of deeply fissured clay soil. The fissures remained dry to a depth of at least 1 m throughout the storms. Clay soil outside the house was unfissured, even in areas which remained relatively dry during the storms. Three sides of the underhouse area were walled. The fourth side, facing downhill and into the wind was partly covered by a tarpaulin. The bottom of the tarpaulin was folded so that a pool of water collected on both the inner and outer sides.

Forty spiders were collected from under the house during the storms: one from the puddle on the outer side of the tarpaulin; ten from the puddle on the inner side of the tarpaulin; four on the concrete block walls; two on furniture; one in clothing and twenty two on the concrete area. Of those found on the concrete, almost all were

moving toward the tarpaulin. Several applications of surface spray insecticide were given to the concreted area during the storms. When all planks and storage boxes were moved after the storms another thirty five spiders, of which seven were still alive, were found in the concreted area. Some specimens collected during the storms and all those collected after the storms were examined. All were mature males.

Burrows

Two weeks after the storms a search was made for burrows within a 200 m radius of the house. Only four were found, two in bare ground, their usual microhabitat according to Main (1956), and two among litter under shrubs. Their location and architecture are summarised in Table 1. Exoskeletons, recognisable as male *Missulena*, were found around the entrance to two burrows. One of these contained a mature female. The single sheet of web which formed the door of this burrow had become detached and washed several centimetres from the burrow during the storms. The female was not found in the sealed side chamber of this burrow but at the base. Like all four burrows it was oval in shape near the entrance. From specimens collected from surrounding debris and the structure of the burrows, indicates all were the burrows of females. The burrows show various features described by Main (1956, 1976, 1980) but suggest a greater intraspecific diversity. The distinctive double entrance described by Main (1956) as a generic characteristic of *Missulena* was not observed.

Several open, unlined burrows were observed in the dry clay under the house during the storm but had disappeared later. The dry clay area was inspected two weeks after the storms and the surface disturbed. No spiders were found in the clay fissures but in the 24 h following the soil disturbance, four mature male specimens were found wandering on the adjacent concrete. Other than this, no further males were found wandering on the concrete or in the surrounding area throughout the six weeks following the storms while the area was under observation.

Bite

While observing the spiders, I was bitten three times by a single spider on the inside left forearm. The puncture wounds caused no immediate pain but within 24 h the area had become red and swollen, and 48 h later, a hot, oedematous area 20 cm around the bite had developed. The puncture sites were infected and becoming ulcerous. There were no general symptoms of nausea, palpitations or faintness. Topical application of tetracycline cream removed the symptoms within 48 h. This rapid response suggests these symptoms were due to the cheliceral bacteria rather than toxin.

Table 1. *Missulena* burrow architecture.

Burrow No.	1	2	3	4
Occupant *	not present	mature female	not present	not present
Ground cover	litter under bush	bare clay	bare clay	litter under shrubs
Entrance debris	none observed	1 male carapace	none observed	many fragments of about 6 mature males
Entrance silk	flared outwards	flared outwards	collapsed; raised	collapsed; raised
Door	none observed	flat detached sheet	none observed	none observed
Burrow depth	15 cm	15 cm (see text)	15 cm	15 cm
Side chamber	sealed, no silk	sealed, no silk	none observed	sealed, no silk
Burrow shape	oval near entrance	oval near entrance	oval near entrance	oval near entrance
Other	ant remnants in burrow silk			

* Without occupants the identity of burrows 1, 3, and 4 can only be assigned tentatively to *Missulena*

Discussion

These observations suggest that the fissured network of dry clay forms the preferred habitat for the mature male *Missulena* because 1) no males were found in burrows; 2) large numbers, all males, were found in a small area with limited access; 3) a larger egress than ingress was shown by the number of spiders caught in the pools of water formed by the tarpaulin; 4) spiders found on the concrete were leaving, not entering, the underhouse area; 5) further male specimens were found after disturbance of the clay fissure area. These findings suggest that males do not build burrows after maturation. The fissure network would provide a large area of cryptic habitat explaining the paucity of male specimens observed outside the breeding season.

It has been suggested (Main 1956) that burrow flooding is the cause of some males wandering. Observations presented here suggest high humidity rather than flooding is the primary cue for males to wander. Firstly, heavy rain evidently did not flood the burrows of female *Missulena*, or those of other mygalomorphs or lycosids found in the area. Lycosid burrows in more exposed areas and without the protection of a silk lining should be the first affected, yet long standing burrows in the area remained intact. Secondly, if males build burrows, flooding would affect males no more than the females or particularly, the less protected immature spiders, yet only the male spiders were found wandering. Thirdly, the fissures in which the male spiders apparently live remained dry, although a thick fog was present for over the greater part of the storm period.

The observations support Main (1980) in the wandering of males during daylight. The debris of dead males around the female burrows also supports the timing of the mating season during late autumn and early winter.

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References

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